

REMARKS

Acknowledgement of applicants' claim to priority and receipt of the priority document (in the parent application) is respectfully requested.

The claims in the application were rejected under 35 U.S.C. 103 over JP '090, CN '260 Anderson, Carey or Morisaki, each of these references apparently considered individually. The rejection, whether based on the individual references or a combination of references is respectfully traversed.

The claims in this application relate to a lead free solder containing at least one member of the group of 0.1-1% (preferably 0.4-0.5%) cobalt, 0.01-0.2% (preferably 0.05-0.1%) of iron, 0.01 to 0.2% (preferably 0.05-0.1%) of manganese and 0.01-0.2% (preferably 0.4-0.6%) of palladium; 0.5 to 1% of copper and at least 90.5% of tin. The claims also relate to a soldered article containing a transition metal conductor and being joined through the solder. The claimed invention is not taught or rendered obvious by the prior art.

JP '090 teaches a solder alloy which must include bismuth and indium as essential components, neither of which are employed in the present invention. These elements form a low melting eutectic with tin and as a result, the heat resistance of the solder will be decreased. Further, bismuth easily dissolves and merges into the tin and as a consequence, the fatigue strength of the solder will be decreased. There is no teaching or suggestion that either the bismuth or the indium can be eliminated nor is there a motivation to do so. Accordingly, the Japanese reference cannot render the claimed invention obvious. Further, any combination rejection including this reference would necessarily include both bismuth and indium thereby rendering any combination rejection untenable.

The CN '260 reference relates to a stainless steel baize but fails to teach the incorporation of at least one element selected from the group consisting of cobalt, iron, manganese and cadmium. The presence of at least one element from this group is recited in the instant claims. Accordingly, the Chinese reference does not teach or suggest the claimed composition nor is there any motivation to include any of the missing elements in the composition.

The Anderson patent teaches a tin-silver-copper eutectic alloy in which the silver is 4.7% of this ternary combination. Eliminating the silver would destroy the ternary eutectic and therefore cannot be done. The solder of the present invention, on the other hand, does not include silver. Furthermore, the eutectic in Anderson contains 1.7% copper which is in excess of the amounts specified in the instant claims. Clearly, Anderson does not teach or suggest the claimed invention whether considered alone or in combination with the other references.

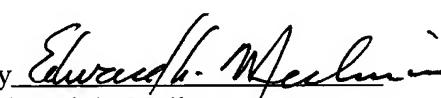
The Carey patent teaches a corrosion resistant copper metal coated with an alloy of tin. The tin alloys are set forth in cols. 29 and 30. Those tin alloys contain 90-99.9% tin and one or more of at least 13 or more elements. None of the specific tin alloys described fall within the scope of the instant claims. To realize a composition having the same elements and amounts as the instant claims, even by accident, would be serendipity. There is no teaching or suggestion of a lead free tin solder as claimed in this application in the reference.

The Morisaki patent relates to a tin based white metal bearing alloy and not to a solder. That alloy must contain at least 5% antimony, at least 0.001% beryllium and at least 0.1% cadmium. There is no teaching or suggestion that any of these can be eliminated. None of these elements are present in the claimed invention.

There is clearly no motivation to realize the claimed solder in the references advanced in the Office Action, whether considered alone or in combination. It is therefore respectfully submitted that the rejection of this case should be withdrawn and the application allowed.

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Respectfully submitted,

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